## REMARKS

Claims 1-29 are now pending in this application. The Office action has been carefully considered. Claims 1-10, 13-27, and 29 were rejected as being unpatentable under 35 U.S.C. § 103(a) over Rostoker et al., U.S. Patent No. 6,470,482 (hereinafter "Rostoker") in view of Lyle et al., U.S. Patent No. 5,956,023 (hereinafter "Lyle"). Additionally, claims 11 and 12 were rejected as being unpatentable under 35 U.S.C. § 103(a) over Rostoker in view of Lyle in further view of Wittenburg et al., U.S. Patent No. 6,515, 656 (hereinafter "Wittenburg"). Furthermore, claims 28 was rejected as being unpatentable under 35 U.S.C. § 103(a) over Rostoker in view of Lyle in further view of Hurtado et al., U.S. Patent No. 6,418, 421 (hereinafter "Hurtado").

By present amendment, claims 1 and 14 have been amended for clarification and not in view of the prior art. Applicants submit that the claims as filed were patentable over the prior art of record, and that the amendments herein are for purposes of clarifying the claims and/or for expediting allowance of the claims and not for reasons related to patentability. Reconsideration is respectfully requested.

Turning to the 35 U.S.C. § 103(a) rejections, one or more aspects (hereinafter "aspects") of the subject matter disclosed by applicants relate to a interacting with a modeling layout algorithm in a computing environment having two engines. More specifically, in aspects, a modeling engine and a layout engine work in conjunction with each other to facilitate the emulation of electronic modeling elements in an electronic system design.

As such, aspects of the subject matter disclosed are directed to enabling incremental and interruptible automatic layout operations (operations that are very time-

consuming and resource-intensive) that are conducted between two specific engines called a layout engine and a modeling engine. Each of these engines work in conjunction with each other to provide an automatic layout process for the modeling of a specific electronic design, such as a microchip layout or a motherboard layout.

Embodiments of the subject matter disclosed by applicants further comprise a defined set of interfaces (*e.g.*, of a COM object) between a layout engine and a modeling engine. In aspects, the modeling engine calls upon these interfaces to start and stop the layout process, preserve and restore state information, and perform other functions. In other aspects, the layout engine, which may be a pluggable component in the computing environment, raises events through another interface to indicate when the layout engine may be safely interrupted or to indicate progress. Then, the modeling engine can call back into the layout engine to stop the layout if the user has requested that the layout be interrupted. Using these interfaces between the modeling engine and various layout engines, one may interrupt a layout process while preserving and eventually restoring its state, thereby enabling incremental layout operations that do not lose progress. Note that the above description is for example and informational purpose only and should not be used to interpret the claims, which are discussed below.

Rostoker on the other hand, does not deal with a set of at least one interface connecting a modeling engine to a layout engine and including at least one interface through which the modeling engine communicates with the layout engine to provide state-maintained user interaction with the automatic layout process. Rather, Rostoker is directed to a *simulator* that either performs a "simulation run from a set of initial conditions or a simulation stepped run which continues from the last simulation's ending

point." Rostoker, column 10, lines 16-18. Further, user interaction in Rostoker is limited to "... instruct[ing] the editor to create areas on the display screen adjacent to selected schematic symbol connection points (pins) or on connection nets (wires). By conventions already available in place in all editors, compilers, and simulators, these connection points and/or connection nets are uniquely identifiable." Rostoker, column 9, lines 43-48. In other words, Rostoker discloses that the user is limited to providing user interaction during the edit mode which does not occur when the automatic layout process is running. Significantly, Rostoker does not disclose or suggest allowing state-maintained user interaction with an automatic layout process to achieve a result other than a cancellation of the of the automatic layout process.

Rostoker does not disclose, suggest, or remotely hint the subject matter recited in the claims. Rather, if anything, Rostoker *teaches away* from subject matter recited in the claims as Rostoker discloses allowing a user to interact with an editor in a non-operational mode (e.g. edit mode). In other words, the user interaction discussed in Rostoker teaches that the simulator must be non-operational for the user to interact with the editor portion of the simulator. For example, allowing a user to interact with an editor in a non-operational mode (e.g. edit mode) is far different that than allowing state-maintained user interaction with an automatic layout process to achieve a result other than a cancellation of the of the automatic layout process as recited in claim 1.

Similarly, Lyle does not cure the deficiencies of Rostoker. Lyle does not disclose or suggest a computing device system that includes at least one interface through which the modeling engine communicates with the layout engine to provide state-maintained user interaction with the automatic layout process other than to cancel the automatic

layout process as recited in claim 1. Thus, in any permissible combination, the cited references still fail to disclose or suggest the subject matter recited in applicants' claims

By law, in order to establish *prima facie* obviousness of a claim, all of the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). In addition, "all words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). Further, if prior art, in any material respect teaches away from the claim, the art cannot be used to support an obviousness rejection. *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed Cir. 1997).

Turning to the rejection of independent claim 1, independent claim 1 generally recites a computing device system including a modeling engine for editing modeling elements that is connected to a user interface and operable to emulate an electronic system design having a plurality of electronic elements, a layout engine that is connected to the modeling engine and configured to execute an automatic layout process that automatically lays out modeling elements of the emulated electronic system design, and a set of at least one interface connecting the modeling engine to the layout engine that includes at least one interface through which the modeling engine communicates with the layout engine to provide state-maintained user interaction with the automatic layout process other than to cancel the automatic layout process.

The Office action cites Rostoker, "(col. 20, lines 52-57, col. 25, lines 6-10; Examiner interprets the analyzers and interrupters, which are set by the user and can interrupted [sic] the compilation, to be user interactions with automatic layout process)" to allege that Rostoker "teaches in a computing device, a system comprising: ... a set of

at least one interface connecting the modeling engine to the layout engine, the set including at least one [sic, interface] to provide user interaction with the automatic layout process other than to cancel the automatic layout process." Office action, pages 2-3. The Office action admits that "Rostoker et al. fail to teach providing a set of functions with a user interface." Office action, page 3. Additionally, the Office action states that, "Lyle et al. teaches [sic] interface through which the modeling engine communicates with the layout decline [sic, engine]. (col. 10, lines 30-40)" Office action, page 3. Applicants strongly disagree. Applicants submit that the Examiner's interpretation of the analyzers and interrupters within the cited passage is incorrect. Both citations provided by the Examiner refer to the description of FIGS. 10 and 11 with regards to an executable listing of the Analyzer/**Interpreter**, which is indeed not an interrupter. The description of FIGS. 10 and 11 detail the specific workings of the simulator, for example, rules for defining the correct relationship between objects in the constructed knowledge bases. Rostoker, column 23, line 13 – column 25, line 6. The descriptions of FIGS. 10 and 11 do not disclose, suggest, or remotely hint the subject matter recited in the claims.

Furthermore, Rostoker in general teaches that a user can modify the simulator in an edit mode, but not while the simulator is operating a simulation. Rostoker, column 9, line 15 – column 11, line 4. For example, Rostoker, column 9, lines 35-38 discloses "... according to the invention, the editor causes the logic compiler to re-compile the schematic each time a graphical object (schematic symbol) is added, modified, or deleted, and each time a connection is made, changed, or removed." Further, Rostoker discloses "[w]hen the editor receives notification from the simulation that the simulation run is finished, it displays the simulation data on the screen according [sic, to] the specifications

for the display areas that the user has requested ..." as well as "...design rule violations (e.g., timing violations detected during synthesis) flagged by the synthesis process can be presented to the user by display [sic] the portion of the electronic system involved in the violation in schematic form, and presenting simulation results which illustrate the violation on the schematic diagram." Rostoker, column 10, lines 30-33 and column 10, line 65 – column 11, line 4.

Furthermore, a closer reading of Rostoker reveals that Rostoker teaches that the editor receives a command from the user to initiate a simulation and the editor instructs the simulator to begin operation. Rostoker further teaches that the simulator conducts the simulation and returns the results to the editor for presentation to the user. Rostoker, column 10, lines 9-22. In summary, utilizing an editor to instruct a simulator to conduct a simulation and return the results of the simulation to the user via the editor *is not* including an interface through which the modeling engine communicates with the layout engine to provide state-maintained user interaction with the automatic layout process other than to cancel the automatic layout process. At least for these reasons, claim 1 and the claims that depend thereon are patentable over the cited art.

Moreover, the Office action does not provide proper motivation for combining Rostoker with the subject matter discussed in Lyle. However, by law, in order to support a § 103(a) rejection, there must be some teaching, suggestion, or motivation other than applicants' teachings for modifying a cited reference or combining references to achieve the claim as recited. The Office action does not indicate any suggestion or motivation in the prior art of record, either explicit or otherwise, for modifying the references or combining the references in a manner that would achieve the claim as recited, or point

out any teaching as to how such a modification or combination might be accomplished, or what might be accomplished thereby. Instead the Office action merely recites, "[i]t would have been obvious to an artisan at the time of the event to include Lyle's teaching with Rostoker's method in order to provide [sic] user with the ability to pause [sic] entire process with a push of a button." Office action, page 3. Such broad, conclusory statements do not come close to adequately addressing the issue of motivation to combine, are not evidence of obviousness, and therefore are improper as a matter of law. *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999).

Additionally, any motivation for including an interface through which the modeling engine communicates with the layout engine to provide state-maintained user interaction with the automatic layout process other than to cancel the automatic layout process comes directly from applicants' teachings, not from any of the cited references. See applicants' disclosure, page 33, lines 1-20 and page 38, lines 8-24. It is well settled that such a hindsight reconstruction based on applicants' teachings is impermissible by law, as in order to support a § 103(a) rejection, there must be some teaching, suggestion, or motivation other than applicants' teachings for modifying a cited reference or combining references to achieve the claim as recited.

Furthermore, even if the references were somehow combinable in the manner suggested by the Office action (which they are not), they would still fail to teach a system including an interface through which the modeling engine communicates with the layout engine to provide state-maintained user interaction with the automatic layout process other than to cancel the automatic layout process as recited in claim 1. At least for this

additional reason, claim 1 and the claims that depend thereon are patentable over the cited references.

Similarly, independent claims 14 and 19 are patentable over the cited art. Claim 14 recites, in part, starting a layout engine to lay out electronic model elements that are part of an emulated electronic system, receiving information from the layout engine indicating that it can be safely interrupted within a current state, and interrupting the layout engine in the current state based on the information. Claim 19 recites, in part, starting a layout engine to lay out electronic model elements that are part of an emulated electronic system, providing information to the layout engine by which the layout engine preserves state information, interrupting the layout engine, providing information to the layout engine by which the layout engine restores state from the state information, and restarting the layout engine from the restored state. As discussed above, the cited references do not disclose or suggest interruption of a layout engine via state-maintained user interaction with the layout engine other than to cancel the layout engine. Thus, independent claims 14 and 19 and the claims that depend thereon are patentable over the cited references.

Regarding the rejection of dependent claims 2-10, and 13, the Office action rejected claims 2-10, and 13 under 35 U.S.C. § 103(a) as being unpatentable over Rostoker in view of Lyle. Applicant respectfully submits that the rejection of claims 2-10 and 13 is improper. Claims 2-10 and 13 depend from independent claim 1. For at least the reasons stated above with reference to claim 1, Rostoker does not disclose, teach, or even suggest the limitations of claim 1. Furthermore, Rostoker actually *teaches*

*away* from the limitations of claim 1, and therefore, Rostoker cannot be properly used to reject claims 2-10, and 13 under 35 U.S.C. § 103(a).

Regarding the rejection of dependent claims 11 and 12, the Office action rejected claims 11 and 12 under 35 U.S.C. § 103(a) as being unpatentable over Rostoker in view of Lyle in further view of Wittenburg. Applicant respectfully submits that the rejection of claims 11 and 12 is improper. Claims 11 and 12 depend from independent claim 1. For at least the reasons stated above with reference to claim 1, Rostoker does not disclose, teach, or even suggest the limitations of claim 1. Furthermore, Rostoker actually *teaches away* from the limitations of claim 1, and therefore, Rostoker cannot be properly used to reject claims 11 and 12 under 35 U.S.C. § 103(a).

Regarding the rejection of dependent claims 15-18, the Office action rejected claims 15-18 under 35 U.S.C. § 103(a) as being unpatentable over Rostoker in view of Lyle. Applicant respectfully submits that the rejection of claims 15-18 is improper. Claims 15-18 depend from independent claim 14. For at least the reasons stated above with reference to claim 14, Rostoker does not disclose, teach, or even suggest the limitations of claim 14. Furthermore, Rostoker actually *teaches away* from the limitations of claim 14, and therefore, Rostoker cannot be properly used to reject claims 15-18 under 35 U.S.C. § 103(a).

Regarding the rejection of dependent claims 20-27 and 29, the Office action rejected claims 20-27 and 29 under 35 U.S.C. § 103(a) as being unpatentable over Rostoker in view of Lyle. Applicant respectfully submits that the rejection of claims 20-27 and 29 is improper. Claims 20-27 and 29 depend from independent claim 19. For at least the reasons stated above with reference to claim 19, Rostoker does not disclose,

teach, or even suggest the limitations of claim 19. Furthermore, Rostoker actually *teaches away* from the limitations of claim 19, and therefore, Rostoker cannot be properly used to reject claims 20-27 and 29 under 35 U.S.C. § 103(a).

Regarding the rejection of dependent claim 28, the Office action rejected claim 28 under 35 U.S.C. § 103(a) as being unpatentable over Rostoker in view of Lyle in further view of Hurtado. Applicant respectfully submits that the rejection of claim 28 is improper. Claim 28 depends from independent claim 19. For at least the reasons stated above with reference to claim 19, Rostoker does not disclose, teach, or even suggest the limitations of claim 19. Furthermore, Rostoker actually *teaches away* from the limitations of claim 19, and therefore, Rostoker cannot be properly used to reject claim 28 under 35 U.S.C. § 103(a).

For at least these reasons, applicants submit that all the claims are patentable over the prior art of record. Reconsideration and withdrawal of the rejections in the Office action is respectfully requested and early allowance of this application is earnestly solicited.

## CONCLUSION

In view of the foregoing remarks, it is respectfully submitted that claims 1-29 are patentable over the prior art of record, and that the application is in good and proper form for allowance. A favorable action on the part of the Examiner is earnestly solicited.

If in the opinion of the Examiner a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney at (425) 836-3030.

Respectfully submitted,

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## CERTIFICATE OF TRANSMISSION

I hereby certify that this Amendment, Amendment Transmittal, Petition for Extension of Time, Credit Card Payment Form, and Facsimile Cover Sheet are being transmitted by facsimile to the United States Patent and Trademark Office in accordance with 37 C.F.R. 1.6(d) on the date shown below:

Date: September 6, 2005

Albert S. Michalik